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THE UNDERSTANDING OF SENTENCES: A STUDY OF ERRORS IN READING

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It is the purpose of this report to give a rough sketch of the mistakes made in reading certain paragraphs by students in the elementary school and the first year of the high school, and to state certain facts and principles which are demonstrated, or at least made highly probable, by this census of errors.

In general, the material used here will be paragraphs and questions whose words singly are fairly well known to the pupils in question, but whose sentence structure is somewhat more elaborate than pupils of the grade in question can manage. That is, the study is primarily concerned with the ability of the pupil to understand totals, few of whose elements are unknown, but whose internal relations are somewhat intricate and subtle. Just what the pupil's task was will be clear in each case.

Consider first the task of A, B, and C, shown below, in the case of pupils in Grades III to VIII, remembering that here and in all later cases the paragraphs and questions were before the pupil in print, subject according to instructions to as frequent re-reading and as much study as he chose to give to them.[1]

A

Read this and then write the answers to 1, 2, 3, 4, 5, 6, 7, and 8. Read it again as often as you need to.

Tom gave a gray cat to Mary. She gave him a black dog.

1. What did Tom give the girl? .....
2. What did the girl give Tom? .....
3. What was the girl's name? .....

[1] The general custom of trying to do all the work that is given out and the sight of other pupils handing in their papers doubtless counteracted the instructions to some extent.

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4. What color was the dog?.....
5. What color was the cat?.....
6. Was the dog the same color as the cat?.....
7. Did Mary give Tom anything?.....
8. Who gave the cat to Mary?.....

B

Read this and then write the answers to 1, 2, 3, 4, 5, 6, 7, and 8. Read it again as often as you need to.

John had two cents. Tom had four cents. Will had six cents. Mary had ten cents.

1. Who had the most?.....
2. Who had the least?.....
3. Did Tom have more than Will?.....
4. Did Mary have more than Will?.....
5. How many cents did John have?.....
6. How many cents did the girl have?.....
7. Which boy had the most?.....
8. Did Tom have two cents more than John?.....

C

Read this and then write the answers to 1, 2, 3, 4, 5, 6, 7, and 8. Read it again as often as you need to.

John went to the store to work and Will went to school, but Fred went to the park and played ball. Will and Fred came back at four o'clock. John did not come back until after six o'clock.

1. Where did Will go?.....
2. What did Fred do at the park?.....
3. Where did John work?.....
4. Who came back at four o'clock?.....
5. Who came back later?.....
6. What time was it when Fred came back?.....
7. Where did one of the boys play ball?.....
8. Did John come back at the same time as Will?.....

The first possibility to consider is the failure to set the mind toward reading and writing the answers, nothing being written. This occurs very, very rarely. The next possibility is the prepotency of some other sets of associations productive of writing

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over the "read answer" set. So a pupil (of Grade IV A) copies all the questions, or copies the last two words, or writes

1. What did Tom give the girl?.....said Mary.
2. What did the girl give Tom?.....asked her sister.
3. What was the girl's name?.....said her mother.
4. What color was the dog?.....asked Tom.
5. What color was the cat?.....said Mary.
6. Was the dog the same color as the cat?.....asked the woman.
7. Did Mary give Tom anything?.....said her sister.
8. Who gave the cat to Mary?.....etc.

The complete prepotency of some such set is very rare.

Such a prepotency of a wrong set of bonds may appear at the beginning and be discarded as in this case from Grade VI B:

What did he give the girl?.....
What did the girl give?.....
What was her name?.....
What color is the dog?.....
What color is the cat?.....
Was the he the same color as the she?.....
Did she give him anything?.....
Who gave the cat to her?.....

This substitution of pronouns stops at the end of A, the rest of the work being done as directed and with correct results.

Such a prepotency may come in to replace the correct set as in this case from Grade III B:

1. What did Tom give the girl?.....a gray cat.
2. What did the girl give Tom?.....black dog.
3. What was the girl's name?.....girl's name.
4. What color was the dog?.....the dog.
5. What color was the cat?.....the cat.
6. Was the dog the same color as the cat?.....the cat.
7. Did Mary give Tom anything?.....Tom anything.
8. Who gave the cat to Mary?.....etc.

The questions themselves may be prepotent, little or no reference being made to the paragraphs. This is perhaps eight times as frequent as the errors previously described, but is still very rare. The following (III A) is one of the most extreme cases of neglect of the paragraph as a feature of the situation (dashes mean correct answers, using the facts of the paragraph):

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A

1. Tom gave the girl a skate.
2. - - - - -
3. - - - - -
4. - - - - -
5. gray and white.
6. the dog was gray and white.
7. she gave him a chicer bord.
8. - - - - -

B

1. John did have the most titkets.
2. Yes Tom had 75 and Will had 40 (illegible).
3. he had 50c.
4. she has $1.00.
5. Johefs had $2.00.
6. had 3c and Tom has 5c.

C

1. he went to Bronx Park.
2. - - - - -
3. in the country.
4. Joe did.
5. - - - - -
6. - - - - -
7. in the forest.
8. Yes they came home at 4 o'clock.

Even here the paragraphs are used somewhat; and in general the condition is one of frequent or occasional, not total, neglect of the paragraph. It is easily shown that the paragraphs have been at least partly read and are effective to some extent in determining response even in those cases where the pupil at first sight seems to be attending to the question only. For example, a girl responds to questions 1, 2, 3, and 4 on paragraph A by:

A

1. a new hat.
2. a new suit.
3. Helen Chrystal.
4. gray dog.

The gray is almost surely due to the "gray" in the paragraph, since it is a very unlikely associate for the question alone.

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The wrong paragraph is sometimes used, especially for the last question of A, where by far the most frequent mistake is "John."

Where the question is answered with the aid of the paragraph a very common error is the use of a wrong element from the paragraph. Actual inventions are very rare, if any word that makes sense is found in the paragraph. Thus in wrong answers the dog is most often *gray*, the cat most often *black*. Will went to the park, *John* came back at four o'clock, *Fred* came back later, and so on. The addition of a wrong element found in the paragraph also occurs. Thus the dog or cat is "*gray and black*," "*John and* Mary" had the most," "*Tom and* Will" or "Will *and John*" or "Fred *and John*" came back at four o'clock.

The failure to use the facts of the paragraph to show the inappropriateness of an answer is of course common, as in the cases quoted here. Much less common, but still occurring, is the failure to call up and use obvious facts of general experience which conflict with the answer as written. Thus *blue* as the dog's color, or *all* as the answer to the question, "Did John come back at the same time as Will?"

These facts—the use of a wrong element and the addition of a wrong element to the correct one—are better considered as special cases of a much more general and very important principle that *any element in the paragraph may be over-potent in determining the response*. It is not so true to say that the pupil often selects a wrong element for his answer as to say that every element of the paragraph tends to appear as the response to any question whatever about it. Thus "John," "Tom," "Will," "John and Mary," and "John had two cents" all appear as responses to question 1 on paragraph B, and "Tom," "Will," and "Mary" as responses to question 2 on paragraph B. It will appear unless some other element outdistances it or unless it is repressed by some contrary force. Evidence for this I have given in detail elsewhere.[1] It consists of cases of over-potency, like that of *xyz* in the following:

H

Read this and then write the answers to 1, 2, 3, 4, 5, and 6. Read it again as often as you need to.

[1] *Psychological Review*, May, 1917.

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You need a coal range in winter for kitchen warmth and for continuous hot-water supply, but in summer, when you want a cool kitchen and less hot water, a gas range is better. The *xyz* ovens are safe. In the end ovens there is an extra set of burners for broiling.

1. What two varieties of stoves does the paragraph mention?
"*xyz*." "Gas range and *xyz*."
"*xyz* ovens and end ovens."
2. What effect has the use of a gas range instead of a coal range upon the temperature of the kitchen?
.....
3. What is needed to provide a supply of hot water all day long?
"The *xyz* ovens are safe."
4. For what purpose is the extra set of burners?
"The *xyz* ovens."
5. In what part of the stove are they situated?
"The *xyz* oven side."
6. During what season of the year is a gas range preferable?
.....

In a similar manner nearly every element in paragraph I becomes over-potent in the case of some pupils, as shown by the responses by pupils in Grades V, VI, and VII, which are shown in Table I.

I

Read this and then write the answers to 1, 2, 3, 4, and 5. Read it again as often as you need to.

Nearly fifteen thousand of the city's workers joined in the parade on September seventh, and passed before two hundred thousand cheering spectators. There were workers of both sexes in the parade, though the men far out-numbered the women.

1. What is said about the number of persons who marched in the parade?
.....
2. Which sex was in the majority?
.....
3. What did the people who looked at the parade do when it passed by?
.....
4. How many people saw the parade?
.....
5. On what date did the event described in the paragraph occur?
.....

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TABLE I

Over-potent Element	Question	Response
Fifteen thousand	1	Passed before 200000 and 15000
	2	The fifteen thousand
	3	Fifteen thousand of the parade
	4	Fifteen thousand
Workers	2	Workers
		Workers of sex in the parade
		Workers were in the majority
	3	There were workers
Joined	1	They joined
		They were joined
	3	They were joined in the parade
		They cheered, they joined them
Parade	2	In the parade
		Both in parade
		Sexes in the parade
	5	The parade
Seventh	1	September seventh
	2	Seventh
	3	September seventh
	4	Seventh Avenue
Two hundred	1	Passed before two hundred
	2	Two hundred spectators
	3	Two hundred thousand
	4	Two hundred
Cheering	2	Cheering
Spectators	1	Parade spectators
	2	Spectators and working
	3	The people who looked cheered the spectators
Both	2	There were both workers
		There were workers in both spectators
Sexes	1	People of both sexes cheering them
	2	Sexes in the parade
		Sixes
		Cheered the sex in the parade
Though	5	Thought the man fat out
Men	2	Men and women
	3	They cheered the men in the parade
	4	The men outnumbered the women
Far	2	Far out women
Out	3	They counted out how many women
Numbered	3	They numbered the people
		Numbered the women
		The men numbered women
Women	2	Sexes of women
		Men and women

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It is also the case that elements in the question tend to be over-potent and to determine response more or less irrespective of the rest of the question. Thus in question 2 on paragraph A *girl* so acts producing the response "Mary." In question 1 on paragraph B *most* so acts producing the response "22c all." In question 3 on paragraph B *more* so acts producing "2 cents more" and "4 cents more." In question 5 on paragraph B *How many cents* so acts producing "four cents," "six cents," "ten cents."

In the case of question 1 on paragraph I we have responses showing *is said*, *number*, *persons*, *marched*, and *parade* acting over-potently.

is said	"They say halt." / "The captain says march."
number	"The men outnumbered the women." / "They outnumbered the women."
persons	"Irish."
marched	"They marched nice." / "They marched very straight."
parade	"There were a lot of floats."

Under-potency is the obvious complement of over-potency. Notable cases are the answers "Yes" to question 1 on paragraph F, and "No" to question 2 on paragraph F due to under-potency of the *It may seem, but other duties prevent*, and *might let her lessons go undone*. These answers are very common.

F

Read this and then write the answers to 1, 2, 3, 4, 5, 6, 7, 8, 9, and 10. Read it again as often as you need to.

It may seem at first thought that every boy and girl who goes to school ought to do all the work that the teacher wishes done. But sometimes other duties prevent even the best boy or girl from doing so. If a boy's or girl's father died and he had to work afternoons and evenings to earn money to help his mother, such might be the case. A good girl might let her lessons go undone in order to help her mother by taking care of the baby.

1. Must a good boy always do all his school work?

.....

2. Will a good girl sometimes fail to get all her lessons?

.....

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3. What are some conditions that might make even the best boy leave school work unfinished?

.....

4. Answer the question just asked, supposing it to be a girl instead of a boy?

.....

5. What might a boy do in the evenings to help his family?

.....

6. How could a girl be of use to her mother?

.....

7. What is it that might seem at first thought to be true, but really is false?

.....

8. What sort of boys and girls does the paragraph tell about?

.....

9. What might be the effect of his father's death upon the way a boy spent his time?

.....

10. Who is mentioned in the paragraph as the person who desires to have all lessons completely done?

.....

In question 3 on paragraph F the *s* of *conditions* is very, very commonly under-potent, the answers being, "If his father died," or "He might have to work." These are so common that in the use of question 3 on paragraph F in a scale we call them correct. *Even the best boy* is under-potent, as shown in the responses, "Play," "Go playing in the streets," "Ball," "To play ball,"[1] "Bad," "Conduct, misbehavior, inattention," "Idleness." All but the last four words are under-potent in the case of the answer, "He never gets his lessons."

The responses to questions 3, 4, and 7 on paragraph F are interesting samples of a general fact—the small number of omissions compared with the number of wrong responses. For example, out of 80 children in Grade IV, only 7 omitted question 3 or said that they could not answer it; four times that number failed to give a correct answer. Out of 146 children in Grade V, only 8 omitted it; about three times that number failed to give a correct answer. The pupils either think that they have understood the question and

[1] The author does not imply that there are not in reality valid excuses for even the best boy, but the responses are probably not due to any such sophistications!

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paragraph, or write answers in which they have little confidence, or (and this occurs very often) do not use any clear criterion for understanding. There seems to be a strong tendency in human nature to accept as satisfactory whatever ideas arise quickly—to trust any course of thought that runs along fluently. If the question makes the pupil think of anything or if he finds anything in the paragraph that seems to belong with the question, he accepts it without criticism. Wrong answers are, in reading tests with all ages, too frequent in comparison with admissions of ignorance. This holds of tests in other subjects also.

It seems probable that in scoring pupils' work in schools an admission of ignorance should not be penalized as heavily as an absurd or specially harmful error, and that inadequacies and errors in general should be penalized somewhat more heavily than they now are, at least in the many cases where it is much more useful to know that one does not know and to say so, than to respond wrongly. On the other hand, a mere chronic suspicion and skepticism concerning one's ideas is undesirable. It is healthy to trust the ideas which the laws of habit produce, provided we maintain an active watch for other ideas which may tell whether the first ones are appropriate. The pupil should learn to criticize his responses, but not to be frightened into a mental paralysis.

The responses in these tests show that a tendency produced by reading a paragraph does not remain *in statu quo*, but shrinks and swells, adds on a blossom here or drops off a branch there, all within a minute or less. For example, in question 3 on paragraph F we have as the initial condition, "If father died." This becomes in many cases, "If her father *or mother* died," or, "If a parent died"; a somewhat further growth gives, "Parents dead"; along a different line comes, "If father, *mother*, *or brother* died, "If father, *mother*, *or baby* died," and "Death in family"; then comes, "Death of a relative"; finally, we have "If *anyone* dies." The original father may drop out as in, "Death to his mother." *Sickness* is a natural addition as in, "Mother or father sick or dead," and, "Death or sickness in the family." Various elements, relevant or otherwise, suggested by the family-circle set of mind may become attached, as in, "Death in the family and poverty and sickness," "The

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father or mother died, he have to sell papers," "To get a doctor for a member of the family," "He might leave school if his father died," "Father dies he's have to take his work papers," "His father might die he might have to mind the baby," "If he is injured and if his father died." "Death and money," and "Father or mother dead, bad parents." Some of these responses may have been made irrespective of the *father died* of the paragraph, but the series in general is explainable by the "father died" tendency leading to other family deaths, to death, to sickness, to injury, to getting a doctor.

The responses to question 7 on paragraph F are instructive first as showing very emphatically the tendency of poorer readers to let certain elements be under-potent, in this case the first sentence of the paragraph and to some extent all of the paragraph. Whereas over six-tenths of the pupils in Grade VIII B give the answer suggested by the paragraph, less than one-tenth of those in Grade IV do so. This is a sample of many other facts which show that the giving of answers that fit the question but not the paragraph is fundamentally simply one special case of under- or over-potency—of under-potency of the paragraph or over-potency of the question. It is not the case that good readers deliberately consider only the question. They understand that they are expected to find answers that fit the paragraph, but they neglect this purpose for the time being, or they are carried away by a response suggested by the question alone, or they re-examine the paragraph, but fail to think of the way to use it, and so fall back on some response suggested by the question alone.

The answers to question 7 on paragraph F also show what happens when the pupil is unable to understand a question. He does not as a rule say "I do not know" or omit the response, but rather follows whatever leads are offered by the shreds of meaning that he does see, or by the mere words. In this case the meanings *true*, *false*, and *true-false* thus become over-potent and produce such responses as: "Always speak the truth," "Honesty," "Good," "Be true," "Good girl or boy," "Faith," "Being good," "May be true," "A lie," "A falsehood," "Do not tell a lie to anyone," "A dishonest speeching," "A false person," "A bad girl is always false,"

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"The boy who wants to shirk his work," "Not doing your daily work," "Doing wrong," "She is unhonestly," "The teacher might think the excuse false," "Because it might be a liar," "A boy might be false," "He might be telling a lie," "Make believe your lessons are done," "That he is honest and afterward found to be false," "He has to show it," "Nothing."

There may be a mixture of this or that feature of the paragraph with the true-false elements in the question. Thus we have as responses: "Writing over," "To tell the teacher the truth," "Sickness," "Play truant from school," "Doing his duty," "Prevention," "Won't do her lessons," "Don't go to school," "To disobey your mother or father," "To leave school," "A good girl," "To help your mother," "Not to help the family."

When the "*seems true but is false*" is fairly understood, but the significance of the first sentence of the paragraph in connection with it is under-potent, there may be all degrees of potency of other elements of the paragraph from zero, in such responses as: "Moving pictures," "A big doll," "A painted man," to such as: "Death," "School," "Work," "To be rich," "Bad excuses," and then to stronger traces, as: "That the baby is sick," "To say your mother is sick and she isn't," "Telling the mother that he has to do lessons," "To think a fellow does his work when he doesn't," "That a child is too lazy to do honest work," and so on to clear products of the paragraph, such as: "Other duties," "That boys or girls do not do home work," "That the boy's father is dead," "That his father did not die," "When a boy or girl does not do their home work and has time to do it," "That a good boy or girl leaves school," "That a child does not want to do his lessons," "That good children do not always get their lessons done," "Do all his lessons if he cannot."

Question 7 on paragraph F also illustrates well the tendency of every element in a paragraph to act with undue potency. Even in a small group (about five hundred), a majority of whom are in Grades VI, VII, and VIII, we find almost every phrase in the paragraph given by somebody as a response to this one question. We have for example as responses: "Other duties," "Sometimes other duties," "That a boy or girl must not prevent their duties," "But other duties prevent them from doing so," "Prevention,"

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"The best boy or girl to leave school," "If a boy or girl's father died," "Work," "A boy that does not go to work," "To help your mother," "A good girl helping her mother."

There are two contrasting forms of defective procedure used by children in these tests. The first is to examine the paragraph until some word or series of words is found which does not appear unsuitable, and to use that as the answer. The "Sometimes other duties" and "If a boy or girl's father died" quoted above are specimens of errors initiated by this procedure and left standing for lack of understanding of the question itself, or for lack of proper criticizing ideas. The second is to accept anything from within or without the paragraph which comes to mind without re-examining the paragraph at all closely. In the case of paragraph F, which deals with matters thoroughly familiar to the children, this second tendency is far stronger. If, however, we examine the responses to paragraph I, quoted on page 103, and those that follow in the case of paragraph M, we shall have abundant evidence of the tendency to use series of words verbatim, because of certain superficial appropriateness or because the pupil does not sufficiently feel the need of appropriateness.

M

Read this and then write the answers to 1, 2, 3, 4, and 5. Read it again as often as you need to.

However certain it may seem to be that men work only because they must, and would avoid labor except for the food, clothing, and luxuries that are its rewards, the facts may well be to the contrary. It can hardly be the case that men dislike work because they wish to be utterly idle. For mere rest, mere inactivity, is not commonly enjoyed. To have nothing to do is not what men seek. Were that so, we should envy the prisoner shut up in his cell. If men had to choose between a life spent at eight hours of work daily in a factory and a life spent at eight hours of sitting on a throne without moving hand or foot, many of them would, after trying both, choose the former. Activity of body or mind, at which a man can succeed, is, in and of itself, rather enjoyed than disliked.

1. What is it that this paragraph says may seem sure, but probably is false?

.....

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2. In what respect is a prisoner in his cell like a man with a million dollars?

.....

3. If the absence of any activity were what we wished for, what would be our attitude toward a prisoner in his cell?

.....

4. What is stated in the paragraph to be really liked and not objected to?

.....

5. What choice is described in the paragraph as an argument that work, merely as such, is not always avoided?

.....

Responses of pupils in Grades VII and VIII in the first year of the high school are the following:

M 1. However certain it may be that men work.
Some men envy a prisoner in a cell rather than work.
Because they must and avoid labor for food, clothing, and luxuries.
Men dislike work because they wish to be utterly idle.
For mere rest mere inactivity is not enjoyed.
To have nothing to do is not what men seek.
Were that so we should envy the prisoner shut up in his cell.
If men had to choose . . . . former (quoted in full).
Activity of body is . . . . disliked (quoted in full).

M 2. He sits on the throne without moving a hand or foot.
We should envy him.
Activity of body or mind . . . . disliked (quoted in full).
It can hardly be the case . . . . idle (quoted in full).
The prisoner sits in his cell idle. The man with 1000000 sits on a throne without moving hand or foot.
To have nothing to do.
To have nothing to do is not what men seek.

M 3. To have nothing to do.
To work eight hours in a factory.
For mere rest, mere inactivity, is not commonly enjoyed.
For mere rest.
Is rather enjoyed than disliked.

M 4. Food clothing and shelter.
For a mere rest.
Men dislike work because they wish to be idle.
Men dislike work because they wish to be utterly idle.
That men work because they must.
To have nothing to do.

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To have nothing to do is not what men seek.
Mere rest mere inactivity is commonly not enjoyed.
Eight hours of sitting on a throne.
He would rather be enjoyed than disliked.

M 5. A man can succeed rather than enjoy than disliked.
Would avoid labor except for food clothing.
Would avoid labor except for food clothing and luxuries.
For food clothes and luxuries.
For food clothing and luxuries that are its rewards.
That men dislike work because they wish to be idle.
To have nothing to do is not what men seek.
For mere rest and mere inactivity.
For mere rest mere activity is commonly not enjoyed.
To have nothing to do.
Activity in body and mind.
It is rather enjoyed than disliked.
A man activity of mind or body at which a man.
Activity of body and . . . . disliked (quoted in full).

This fishing around in the text for something to use and its use without reorganization is perhaps the most debased form of reasoning—selective thinking—which school work shows. Many educational theorists will, indeed, deny that it is reasoning. It certainly is a very inadequate form; and the extent to which it prevails amongst pupils in even the higher grades shows the need for practice in reading and study. I am inclined to think, however, that the cure for it is not to repress the verbatim use of wrong, irrelevant, or roughly appropriate quotations, but to permit it *plus careful examination of the quotations to see if they really do meet the need.*

So far little has been said concerning mistakes due to attaching the wrong meanings to words in the questions or in the paragraph, or to mistakes due to inadequate meanings. Such of course occur very frequently, but they require little explanation; nor would a recital of them add much to the obvious fact that failure of a word to call up its meaning necessarily hinders understanding of the question or paragraph. The relational words—conjunctions, pronouns, prepositions, such words as: as, seem, prevent, even, outnumbered, so as, only, contrary, may, hardly, and the like—are specially important in the case of these paragraphs, where the plan

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was to use few rare or technical words. The entire subject of errors due directly to lack of word-knowledge may best be omitted from this paper. Indirectly, such lack favors over- and under-potency of elements and distortion of relations.

In general, the process in understanding (or in misunderstanding) a paragraph is as follows:

Each word (sometimes a part of a word) tends to call up those responses which are bound to it by the pupil's past experience working under the conditions of the present mental set. Of these responses some may be discarded from thought as soon as they appear. The one that is left as the determiner of meaning may be "right" or "wrong" or one that contributes zero meaning (such as the mere approximate sound of the word "paragraph" or "effect" or "condition" to a child who has never heard those words used). For the meaning attached to a word to be "right" means to be right for the purpose of understanding the paragraph—to be adapted to meanings of the other words. Tendencies for words to call up universally wrong meanings or meanings right in other connections but wrong here have to be suppressed. These contributory elements of meaning have to be felt in the right relations. The relations are indicated by the relational words, by the order of words in the paragraph, and by the word-forms and sentence structure.

The bonds leading from relational words, word-orders, and word-forms to the appropriate responses are often not so strong as they need to be for correct reading. There are consequently tendencies for the non-relational words to call up their customary relations, even though the conjunctions and sentence structure show that these customary relations do not hold in the paragraph in question. Thus, *Every boy and girl who goes to school ought to do all the work that the teacher wishes done* is understood as it is in disregard of the *It may seem at first thought that* which precedes it and the *But* which follows it. Thus, *men work . . . .* is related to *for food, clothing, and luxuries* according to past habit in disregard of the *it may seem that* and the *to the contrary.*

As one would expect, elements right in themselves will be transposed into wrong relations. *That men work only because they must*

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becomes, "That men must work." *When you want a cool kitchen a gas range is better* produces, "For a gas range you need a cool kitchen."

The contributory tendencies of each word and word-group have to be right, not only in nature, but also in their amounts of potency or influence or force, each in comparison with the others. Understanding is "thinking things together." For each problem or purpose of understanding, the elements have to be organized in a balanced system. The complexity of this task is great in reading even a simple sentence. So the commonest cause of errors in the material we have examined is the under-potency or over-potency of certain elements in the questions or paragraph. The successful response to a question or to a paragraph's meaning implies the restraint of tendencies of many words to be over-potent and the special weighting of other tendencies. This task is quite beyond the power of weak minds, and is of the same selective and co-ordinating nature as the more obvious forms of reasoning in mathematics or science. It is this task which shows the comprehension of textbooks and lectures to be far above the level of merely "passive" or "receptive" work. When the reading of textbooks and the hearing of lectures is really passive or receptive, comprehension will rarely result.

Understanding a spoken or printed paragraph is then a matter of habits, connections, mental bonds, but these have to be selected from so many others, and given relative weights so delicately, and used together in so elaborate an organization that "to read" means "to think," as truly as does "to evaluate" or "to invent" or "to demonstrate" or "to verify."

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